NOVEMBER/DECEMBER 2023

FASC32/CASC32/BASC32 — QUANTITATIVE TECHNIQUES – I

Time : Three hours Maximum : 75 marks

SECTION A — (10 × 2 = 20 marks)

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Answer ALL questions.

1. What are the objectives of operation research?

2. List out any four application of operation research.

3. What are the advantages of linear programming?

4. Write a note on basic feasible solution.

5. Define: "Vogel's Method".

6. What is a slack variable?

7. Write down the basic steps involved in solving a transportation problem.

8. When does degeneracy happen in transportation problem?

15. (a) Distinguish between the transportation problem and assignment problem.

Or

(b) What are the areas of operations of assignment problems? Explain.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. What are the various models of operation research? Explain.

17. Use simplex method to solve the LPP problem

Maximize $z = 4x_1 + 10x_2$

Subject to constraints

$2x_1 + x_2 \leq 50$
$2x_1 + 5x_2 \leq 100$
$2x_1 + 3x_2 \leq 90$

and $x_1, x_2 \geq 0$

18. Find the initial basic feasible solution to the following transportation problem using VAM, given the cost matrix:

	D1	D2	D3	D4	Supply
S1	20	25	28	31	200
S2	32	28	32	41	180
S3	18	35	24	32	110
Dummy	0	0	0	0	50
Demand	150	40	180	170	

19. Using North – West Corner Method (NWC Rule) Obtain an initial basic feasible solution to the following transportation problem

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Requirement	200	225	275	250	

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